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GEMSTONES AND DECORATIVE-ORNAMENTAL STONES OF VIRGINIA

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Virginia is noted particularly for beautiful gem quality spessartine garnet, rare facet grade microlite, amazonite, fine moonstone, and topaz. In addition Virginia is well known for staurolite, prehnite, turquoise crystals, and the popular rock unakite.

Localities for forty-nine minerals, rocks and organic materials found in Virginia, which have been used as gemstones and decorative-ornamental stones are described in this report. Many of the localities will be familiar to Virginia mineral collectors. Some of the areas mentioned are closed to collecting, reclaimed or inaccesible for other reasons. **It is very important that a collector have the permission of the property owner before entering a property to collect minerals.**

There has been much written on Virginia mineral localities but no reports are available which describe only the gemstone occurrences in the state. "Minerals of Virginia - 1990" (Dietrich, 1990) is the most comprehensive work on Virginia localities. Zeitner (1968) describes some of the more outstanding Virginia localities which have produced gemstones and interesting mineral specimens. The "Virginia Minerals" publication has for many years reported on important gemstones and minerals found in Virginia.

In this report gemstones are divided into three sections: minerals, rocks and organic gemstones. The gemstones in each section are listed in alphabetical order.

MINERALS

ALLANITE (EPIDOTE GROUP)

Amherst County - Black pitchy allanite is found in a small pegmatite mass 0.5 miles west of the Lynchburg reservoir. Other minerals found in this pegmatite include almandine (garnet), chlorite, ilmenite, monazite, pyrite, quartz, rutile, sphene and zircon.

Pieces of allanite from this locality were tumble polished and some cabochons were made by Mr. Charles R. Burford of Buena Vista. They make attractive stones which resemble obsidian (Mitchell and Redline, 1980). They can be used for adornment, however caution should be used because of their radioactivity.

ANDALUSITE

Campbell County - Andalusite crystals, some very large, have been reported northwest of Altavista (Mitchell and others, 1992). Andalusite at this locality is associated with quartz, sillimanite, kyanite and blue corundum. Many of the andalusite crystals are pseudomorphs (paramorphs) but where the crystal faces show cleavage and glassy pinkish-brown areas, attractive cabochons can be cut.

BERYL

Amelia County - Clear gem quality beryl fragments measuring 0.5 to 1 inches in greatest dimension have been found at the Abner Pinchbeck mine 0.5 miles east of Amelia (Dietrich, 1970). Small bluish-green beryl (aquamarine) crystals, some of gem quality, can be found at the Trueheart pegmatite prospect north of Amelia. A few of the crystals have been faceted into small gemstones (Frank Crayton, personal communication). The beryl is associated with quartz, black tourmaline and small muscovite crystals.

Chesterfield County - Gem quality greenish-blue beryl crystals up to 3 inches in length are associated with pegmatite dikes cutting Petersburg granite in the Dale quarry (Figure 1). Clear glassy areas within the crystals have been faceted into attractive gems (Frank Crayton, personal communication). The quarry is operated by Tarmac Inc.

Powhatan County - Clear beryl crystals (goshenite) occur at the Herbb # 2 pegmatite mine north of Flat Rock. In addition, extremely large blue crystals up to 300 pounds have been found (Giannini and others, 1983). Most of the blue beryl is opaque, however cabochons have been cut from this material. The Herbb # 2 mine was formerly a fee mine but is now closed to collecting. Gem quality aquamarine crystals are also reported from the W.D. Baltzley beryl mine, also called the Jervey mica-beryl mine , near Fine Creek Mills. Crystals, which are often terminated, average 1 inch in diameter and 2 inches long. The crystals, found in the dumps closest to the pit, are loose or embedded in massive quartz (Dietrich, 1990).

Henry County - Small well-formed white to golden beryl crystals, some of gem grade, have been found at the Williams prospect 0.3 miles south of U.S. Highway 58, 3 miles southwest of

Martinsville (Brown, 1962). Golden beryl has also been found in the residuum above an alaskite dike along a ridge crest about 0.5 miles east-southeast of the bridge over Reed Creek, about 1.5 miles north of Providence Church (Henika, 1971).

Franklin County - Pale blue clear, facet grade, beryl crystals have been found at the Simms mine (Zeitner, 1968).

Figure 1. Beryl crystals in pegmatite, largest crystal 3 inches long, Dale quarry, Chesterfield County (photograph by T. M. Gathright, II).

CALCITE

ICELAND SPAR VARIETY

Rockingham County - Clear optical-grade Iceland Spar calcite has been found on a farm near Timberville. There is evidence that this property was mined in the past for calcite possibly for its optical qualities. Rhombohedral calcite cleavage pieces display very well the property of double refraction. Excellent examples of twinning are also found. Calcite from this property make attractive display specimens and could also be considered facet-grade quality.

CAVE ONYX VARIETY

Cave onyx is found in many caves in Virginia. Much of this material was used to make gravestones and various ornaments and decorative pieces. Commercial quantities of cave onyx have been extracted from Botetourt, Rockbridge and Rockingham Counties (Hubbard, 1990).

CASSITERITE

Rockbridge County - Facet grade cassiterite has been reported but not confirmed from the Cash tin mines located near Irish Creek.

CHRYSOCOLLA

Amherst County - Gem quality chrysocolla, associated with malachite, can be found on the dumps of the Christian Tract (Dunlap) copper mine. The chrysocolla is generally an intense blue color and is often associated with green malachite to form very attractive specimens. Cabochons have been cut from this material. Other associated minerals are chalcopyrite, bornite, chlorite and tremolite. The host rock at the mine is an altered peridotite. The mineralogy and geology of this mine was described by Simpson (1980).

CORUNDUM

Campbell County - Blue corundum has recently been found northwest of Altavista near the intersection of State Roads 711 and 712. The mineral is associated with andalusite, sillimanite, kyanite, and paragonite (Mitchell and others, 1992). The corundum occurs as blue aggregates and as small clear blue hexagonal crystals. The crystals observed at the surface appear too small to be faceted into gemstones, however some of the larger clusters which contain good solid blue color could be cut into cabochons and polished.

Grayson County - A piece of deep-blue corundum weighing about 25 grams was found associated with kyanite and rutile at the old Pierce prospect near the western edge of Galax (Kenneth C. Brannock, personal communication). This specimen is probably of gem quality.

Patrick County - Deep blue corundum occurs as both hexagonal crystals and crystalline masses on Bull Mountain east of Stuart. Associated minerals are andalusite, kyanite, mica and chloritoid in mica schist (Genth, 1890). The largest corundum mass observed was 25 mm in diameter.

CRYPTOMELANE

Appomattox County - Cryptomelane, also known as "black malachite", is found on the dumps of two abandoned manganese mines on both sides of State Route 523 near Beckham. The mines were operated by the Enterprise Mining Company. Cryptomelane, at this site, is a hard cutting material with intricate patterns of swirls and eyes. It has a bright metallic luster and makes excellent cabochons (Zeitner, 1968).

DIAMOND

City of Richmond - In 1854 a 23.75 carat diamond was found in south Richmond (then known as Manchester) near what is now the southwest corner of 9th and Perry Streets. It was found by Benjamin Moore, a laborer who was leveling a hill at the time of the discovery (Green, 1982). Moore took the stone to a jeweler in Richmond who determined that it was a diamond and placed a value of $4,000 on it. Moore sold it to Captain Samuel W. Dewey, a geologist and mineralogist from Philadelphia, for $1500.

In 1855 Dewey took the diamond to New York City where it was cut into a gemstone of 11.15 carats. Dewey then sold the stone to prize fighter John Morrisey for $16,000. When Morrisey died late in the 1890s the diamond disappeared and no trace of it has been found since (Figure 2).

Orange County - A "diamond of the first water" was reported to have been found in 1847 on the properties of the Vaucluse gold mine (Anonymous, 1847).

Tazewell County - In 1913 a diamond was found by Frank Brewster in a cornfield on the farm of J.S. Gillespie near Pounding mill. Brewster sold it to H.W. Pabst, a jeweler in Tazewell, who had it cut by J.R. Woods and Sons of New York City. T.A. Pabst, a son of H.W. Pabst, said that Wood described the stone as a beautiful blue white diamond (Holden, 1944).

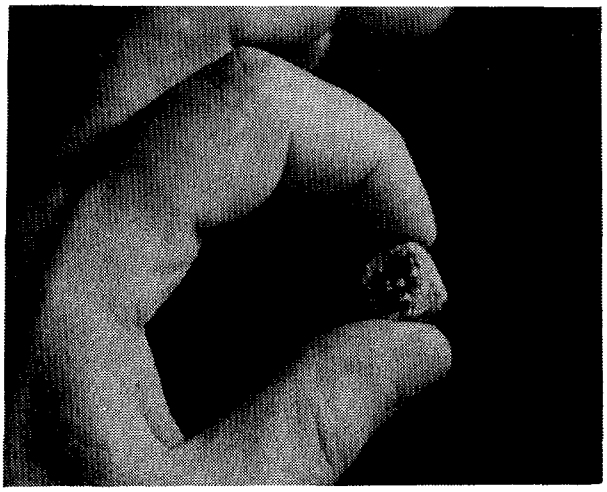


Figure 2. Replica of the 23.75 caret Dewet diamond found in Manchester (south Richmond) . This was the largest diamond found in the U.S. until 1884 (photograph coutesy of the Smithsonian Institution).

EPIDOTE

Epidote is a fairly common mineral in the metamorphic rocks of the Blue Ridge and Piedmont provinces of Virginia. The pistachio or dark green color of epidote is generally too dark for cutting attractive stones. Several localities in Augusta County on Afton Mountain and scattered areas along Little Marys Creek and Irish Creek in Rockbridge County have produced some lighter colored material suitable for cutting.

Albemarle County - Specimens of light green epidote from the Shadwell quarry operated by Luck Stone Inc., have recently been tumble polished with pleasing results (John Koenig, personal communication). The polished material is suitable for use in jewelry.

FELDSPAR GROUP

Feldspar group minerals are one of the most common mineral groups in Virginia. Virginia pegmatite deposits have been producing excellent examples of gem quality amazonite and moonstone for many years. Moonstone may be any variety of feldspar which displays a silvery to bluish light caused by reflections.

Potassium Series

ORTHOCLASE

Hanover County - Excellent gem quality orthoclase moonstone similar in quality to that of Ceylon has been recovered from the gravels of a small creek in the O.W. Harris mica mine near Hewlett (Sinkankas, 1959). These angular fragments have a strong silvery adularescence and a high degree of translucency. The Harris farm was a fee locality at one time but is now closed.

MICROCLINE

Chesterfield County - Microcline moonstone has been reported from the Dale quarry operated by Tarmac Inc. (Rudy J. Bland, personal communication).

AMAZONITE VARIETY

Amelia County - The Moorefield and Rutherford pegmatite mines have produced some of the world's finest gem quality amazonite. The Rutherford #1 mine was worked for amazonite by the American Gem and Pearl Company of New York City from 1912 to 1932. During this period the mine yielded about 15 tons of gem material valued at $60,000 (Sinkankas, 1959). The mine was worked periodically after 1932 and was open for fee collecting for a number of years. It is now closed to collecting except for the Labor Day weekend. Gem quality amazonite continue to be produced from the Moorefield mine, which is currently operating as a fee collecting mine (Figure 3). Amazonite has also been reported from the Berry # 1 mica mine northeast of Amelia (Brown, 1962).

Powhatan County - The Herbb # 2 pegmatite mine north of Flat Rock produced a large amount of amazonite but it was generally too soft and weathered to make good gem material.

Figure 3. Large amazonite crystals in pegmatite, photograph taken at the 45 foot level of Morefield mine, Amelia County.

Plagioclase Series

ALBITE (CLEAVELANDITE), OLIGOCLASE, AND ANDESINE (MOONSTONE)

Amelia County - Both albite and oligoclase moonstone has been found at the Rutherford mines (Figure 4). Several flawlessly cut specimens 3/4 inches in length are in the collection of the United States National Museum (Sinkankas, 1959). In addition to moonstone several gemmy crystals of albite (cleavelandite) have been faceted into small gemstones (William D. Baltzley, personal communication).

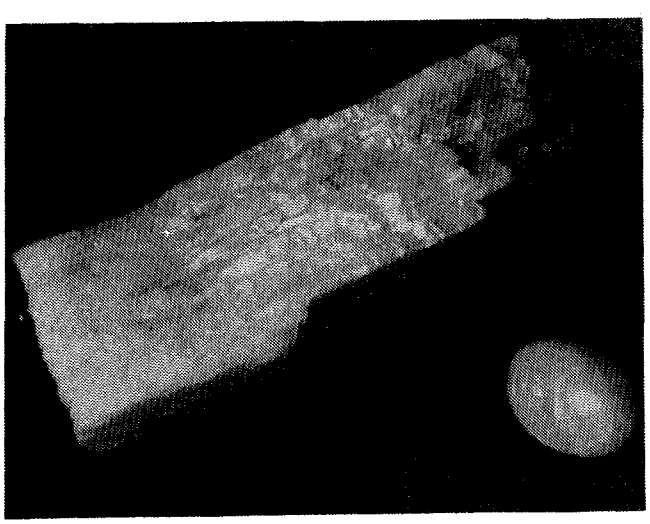


Figure 4. Rough and cut moonstone , large specimen 3 inches, Rutherford mine, Amelia County (photograph by T.M. Gathright, II).

Bedford County - Oligoclase moonstone is reported from the Mitchell pegmatite mine a short distance south of state road 714 about 6.5 miles southeast of Bedford (David Leach, personal

communication).

Hanover County - Andesine moonstone is found at the Feldspar Corporation quarry near Montpelier. It is described as "large steel-gray cleavages" with high opalescence suitable for gemstones. This material is locally abundant in the pegmatite zone (Rudy Bland, personal communication). Beautiful cabochons from the locality have been cut by Peter McCrery (personal communication) which display the cat's eye effect.

FERGUSONITE

Amelia County - Crude square dark-brown crystals of gem quality fergusonite has been reported from the Rutherford # 2 pegmatite mine. Small faceted stones have been cut from clear areas in these crystals (Frank Crayton, personal communication).

FLUORITE

Albemarle County - Massive light green fluorite from the Faber lead-zinc mine has been cut into cabochon and made into jewelry (William F. Giannini, personal communication). The fluorite is associated with galena.

Amelia County - Green crystals of fluorite from the Rutherford # 2 mine have been faceted into small gemstones (William D. Baltzley, personal communication). These stones are on display at the Moorefield mine museum.

GARNET GROUP

SPESSARTINE VARIETY

Amelia County - Some of the worlds finest gem quality spessartine garnets have been found at the Rutherford # 2 pegmatite mine north of Amelia (Figure 5 and 6). On September 1, 1991, a gem quality crystal weighing 2,829 carats was found by Richard Seaver. This specimen is currently on display at the Moorefield mine museum. Other notable spessartines include a 6,720 carat stone found by Sean Sweeney of Rockville, Maryland and a crystal weighing 1675 carats found by John Nygaard of Cumberland, Virginia. William D. Baltzley (personal communication) reports a flawless 30 carat crystal found during the 1960s. Gem quality spessartines have also been found at the Moorefield mine (William D. Baltzley, personal communication).

HEMATITE

Albemarle County - A few pieces of lustrous black specular hematite from Burnleys in the northern part of the county have been cut into cabochons.

KYANITE

Prince Edward County - Blue to bluish-green bladed kyanite crystals have been mined at the Baker Mountain mine near Madisonville. This mine, which was probably the first kyanite mine in the United States, is now abandoned and partially reclaimed. The property is owned by the Kyanite Mining Corporation. The kyanite is associated with quartz, pyrite, rutile and chromian muscovite. Attractive cabochons have been cut from specimens which have good solid blue color. Some crystals have small clear areas which resemble blue sapphire. These crystals could be faceted into small gemstones.

MALACHITE

(see under Chrysocolla)

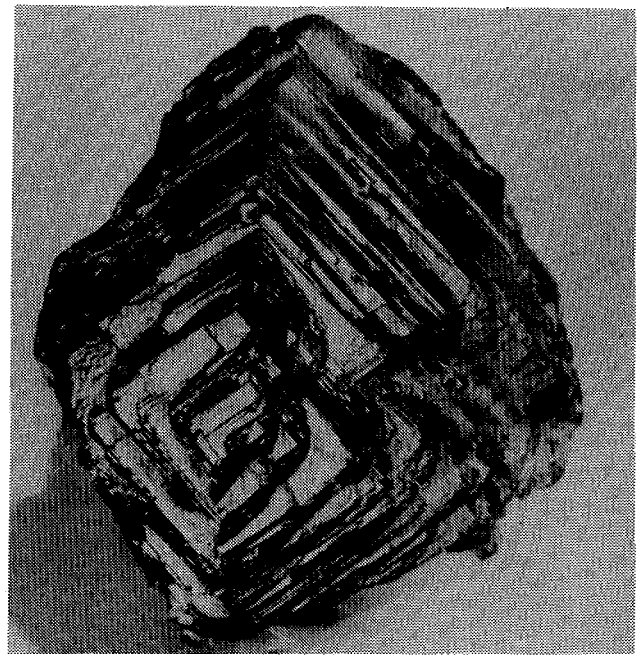


Figure 5. Spessartine garnet crystal from the Rutherford # 2 mine in Amelia County; crystal 2 inches across (photograph courtesy of Smithsonian Institution).

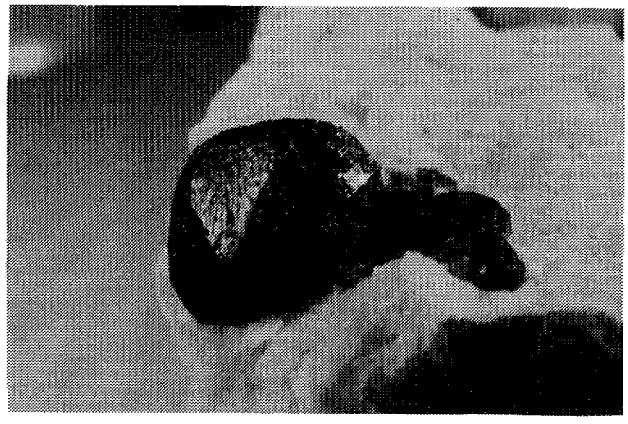


Figure 6. Spessartine in cleavelandite from Rutherford mine, Amelia County; large crystal 0.75 inches across (Photograph by Howard Freeland).

MICA GROUP

Amelia County - Small mica crystals and sheets of mica have been used to construct "mica flower" arrangements for sale as an oddity or unusual ornament.

MICROLITE

Amelia County - In Virginia gem quality microlite has been found only at the Rutherford pegmatite mines north of Amelia (Figure 7). This rare gemstone occurs as olive-green to brown octahedral crystals usually occupying spaces between cleavelandite blades. A flawlessly faceted microlite from this locality is on display at the Smithsonian Institution. Frank Crayton (personal communication) reports a 0.6 carat faceted microlite in his collection. W. D. Baltzley (personal communication) also reports several faceted stones.

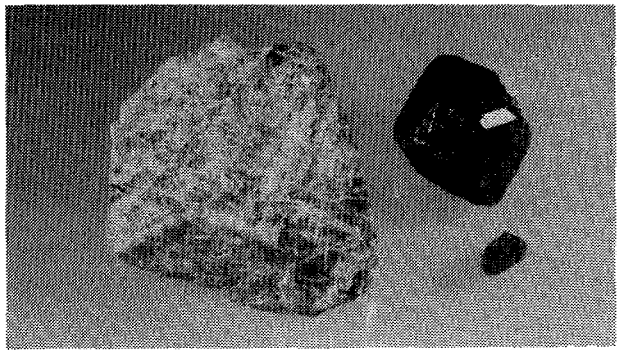


Figure 7. Microlite crystals from the Rutherford mine, Amelia County; largest crystal 2.5 inches (photograph by Howard Freeland).

OPAL

Powhatan County - Specimens of yellowish-brown jasper like opal an be found in a small quarry located near the intersection of Route 60 and 13. Indian artifacts made from this material have been found in the area (W.D. Baltzley, personal communication). Cabachons have also been cut from this material.

Stafford County - Opalized turritella fossils have been collected from the Aquia sandstone from an unknown locality in Stafford County. The interior portions of these fossils contain precious opal fillings exhibiting red, blue and green colors in milky white material (William F. Giannini, personal communication).

PREHNITE

The lime green prehnite can be very attractive, however the mineral is generally considered too porous to maintain a good polish. Two quarries in northern Virginia have produced gem quality material.

Culpeper County - Recently some solid non-porous specimens of prehnite have been collected from the A.H. Smith quarry in the southern part of the county near Mitchells. The material ranges from light- to dark-green and takes an excellent polish. Several cabochon have been made into jewelry. The prehnite occurs as veins in diabase host rock associated with barrerite, a rare zeolite mineral.

Fairfax County - During the 1960s the Fairfax quarry near Centerville became known as one of the best occurrences of gem quality prehnite in the United States (Zeitner, 1968). The material was described as pale apple green in color, of fine translucent quality, and in thick globular solid pieces which take and hold a good polish. The prehnite, which is associated with apophyllite, byssolite, and thaumasite, occurs as veins cutting diabase county rock.

PYRITE

Rockbridge County -Small crystal clusters and single octahedral crystals of pyrite from Barger's quarry near Lexington have been capped and made into small pendants and bolo ties.

PYROXENE GROUP

ENSTATITE: BRONZITE VARIETY

Hanover County - Masses of bronzite, some with pearly submetallic luster, can be found in the Feldspar Corporation quarry near Montpelier. Brilliant cabochons have been cut from this material by Peter McCrery (personal communication).

QUARTZ

AGATE VARIETY

Warren County - Plume agate is light colored chalcedony with black plumes of romanechite (manganese oxide) (Figure 8 and 12). Good examples of this agate are found in some old manganese prospects on the west flank of the Blue Ridge Mountains east of Bentonville (Giannini and others, 1988). This is an excellent cutting material.

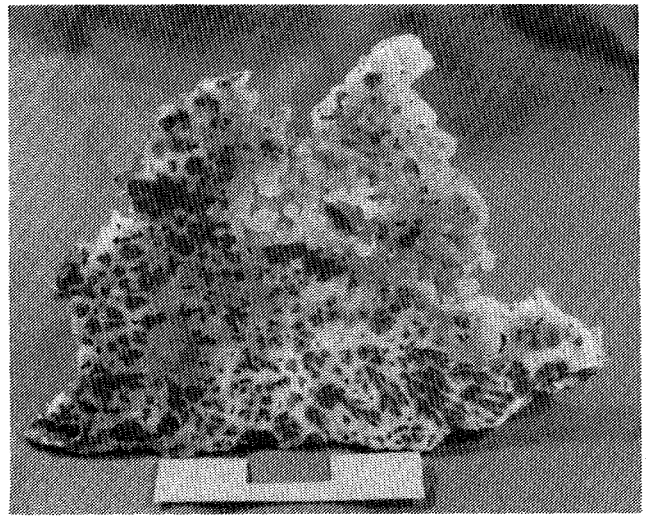


Figure 8. Plume agate from the Runion agate mine near Bentonville, Warren County (photograph by T.M. Gathright, II).

AMETHYST VARIETY

Over 30 occurrences of amethyst from Virginia have been reported (Diethrich, 1990; Gaul, 1980). In this report only the most notable localities will be described, the remaining counties with amethyst occurrences are found in Diethrich (1990).

Albemarle County - Pale lavender to deep violet amethyst crystals up to 3 inches in length (clusters may be as much as 6 inches) were found in a road cut in the Sunny Fields subdivision off State Route 795 near Ash Lawn (Mitchell and Bland, 1963-64). A few of these crystals were faceted and made into jewelry.

Amelia County - Gem quality amethyst has been reported from the Rutherford mines (Pegau, 1932).

Amherst County - Well formed deep purple single crystals and clusters to 2 inches in length have been found on Fancy Hill near the old Sandidges's Post Office. The majority are stout prisms with one or both ends terminated by rhombohedral faces (Sterrett, 1913). These crystals make excellent specimens but very few have large enough clear areas to make good gem material.

The Schaars Farm site has been a fee collecting locality for many years. For information contact Mrs. Charles R. Schaar of Amherst, Virginia, telephone (804) 946-5721. At this locality light to deep purple amethyst crystals up to 2 inches in length (clusters to 3 inches) occur in residual clays derived from underlying granite. Most crystals are singly terminated and many contain enough clear areas to be suitable for cutting.

Charlotte County - Amethyst is found on the old Donald Plantation north of U.S. Highway 40 about 2.5 miles northwest of Charlotte Courthouse. Purple and pale lilac crystals with several intermediate shades are found over a large area along the ridge top. This deposit was mined on a small scale in 1912 (Sterrett, 1913). The crystals are found loose in the soil and have apparently weathered from underlying pegmatites.

Louisa County - Amethyst crystals have been found in loose

soil 4 miles southwest of Trevillians. Most of the crystals found on the surface were small and pale in color. However, trenching revealed a vein which produced larger crystals of deep purple and lilac color some of which were gem quality (Zeitner, 1968).

Gem quality amethyst has also been found northeast of Ferncliff (Rudolph Bland, personal communication).

Nelson County - Gem quality amethyst was mined in 1907 by the American Gem and Pearl Company of New York on the J.S. Saunders farm 2.5 miles northeast of Lowesville. A dozen or more pits were dug along the summit of a low flat ridge. The pits cover an area 300 feet long by 125 feet wide and were up to 7 feet deep. Amethyst crystals were found in pockets in saprolite with bluish opalescent quartz and kaolin (Sterrett, 1913).

Prince Edward County - The George Smith farm 3 miles north of Rice produced some of the finest amethyst found in Virginia Figure 9). This was a fee locality for a period of time in the 1960s and 1970s but is now closed. On the Smith farm large single crystals up to 3 inches long and clusters to 6 inches across were found by hand digging shallow pits. A large crystal cluster with deep purple color is in the James Madison University collection in Harrisonburg. Generally the deepest color and clearest areas for faceting are concentrated near the tips of the terminations (Zeitner, 1968). Amethyst has also been reported from the following counties: Appomattox (Dietrich, 1970), Bedford (Earl, 1980), Buckingham (Zeitner, 1968), Campbell (Zeitner, 1968), Culpeper (R.S. Mitchell personal communication), Fairfax and Fauquier (Rudolph Bland, personal communication), Floyd (Sinkankas, 1959), Fluvanna (Smith and others, 1964), Henry (Cauley and others, 1968), Pittsylvania (K.E. Samuels, personal communication), Prince William (Schlegal, 1957), and Rockbridge (Zeitner, 1968).

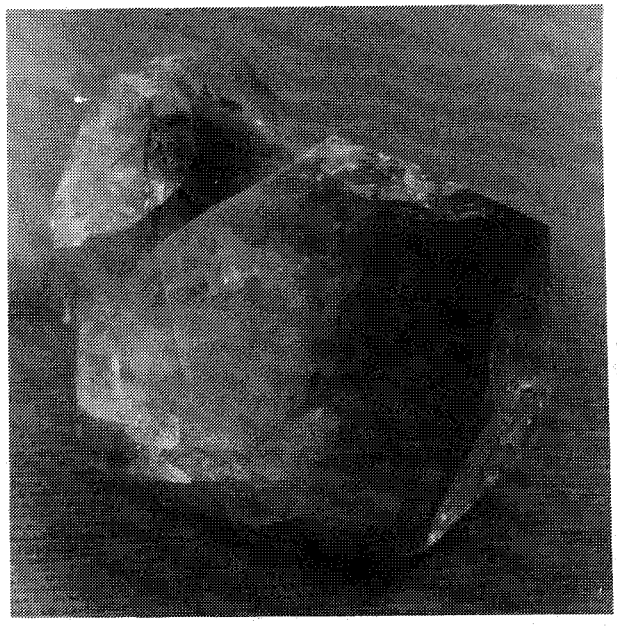


Figure 9. Amethyst crystal (2.5 inches), from near Rice, Price Edward County (photograph by T.M. Gathright, II).

BLUE QUARTZ VARIETY

Blue quartz has been found in many places in the Blue Ridge and Piedmont provinces of Virginia. According to Wise (1981), some of the best collecting areas are located in Albemarle, Amherst, Floyd, Greene, Madison and Nelson Counties. His report gives specific directions to localities in these counties.

Blue quartz has long been used as a gem material in Virginia. Specimens tend to be opalescent and display a waxy luster, especially the light blue samples. When cut and polished the quartz may resemble blue lace agate.

Clear, facet-grade, blue quartz has been found in Pittsylvania County (David Woolley, personal communication). Alluvial blue quartz occurs in Tripps Run, Doctors Run and Four Mile Run in Fairfax County. Some of these pebbles will cut a sharply rayed star (Zeitner, 1968). Quartz with intense blue color has been found in Franklin County (Peter McCrery, personal communication).

The blue color is probably due to microscopic and submicroscopic rutile inclusions as well as closely spaced fractures that are responsible for a light scattering effect (Dietrich, 1965). The color may also be caused by submicroscopic zoisite inclusions.

JASPER VARIETY

Albemarle County - Masses of dark red jasper occur at several localities along the Moormans River (Mitchell and Bland, 1963-64).

Fairfax County - A jasper cabochon labelled Fairfax County is in the gem collection of the Smithsonian Institution (Dietrich, 1990).

Fluvanna County- Good quality jasper is found at the rhodonite prospect north of Kidds Store (Penick, 1987).

Page County - Jasper, some of gem quality, is found at the Ida Copper mine with epiodote, malachite and azurite (Penick, 1987).

PETRIFIED WOOD VARIETY

Chesterfield County - Dark to light brown petrified wood suitable for cutting has been found in the gravel pits along the Richmond-Petersburg Toll Road south of Richmond (R. J. Bland, personal communication).

ROCK CRYSTAL VARIETY

Clear quartz crystals suitable for different types of adornment are found in many areas of Virginia. A few of the more notable localities are briefly described.

Bath County - Clear colorless quartz crystals up to 3 inches in length and large clusters can be found on Chestnut Ridge south of Deerfield. The crystals form in cavities in a hard sandstone. Many of the crystals weather free of the sandstone can be found by digging in the loose soil. Rarely red sphalerite crystals (ruby zinc variety) have been found to occur as inclusions in some of the crystals (Frances Villemagne, personal communication). A small fee may be charged by C.E. Loan to park and cross his farm to reach the best collecting area located on the eastern slopes of Chestnut Ridge.

Rockbridge County - Several farms near Collierstown have produced excellent quartz crystals. The crystals range from clear to smoky and some have clay inclusions and air bubbles. Both scepter and reverse scepter up to 3 inches long are found. Many crystals are doubley terminated and most have extremely smooth and lustrous faces. Crystals from this area have been used in different types of jewelry.

Smyth County - Several farms in Rich Valley near Saltville have produced interesting quartz crystals Figure 10). Many of the crystals contain inclusions of smaller crystals coasted with a black bituminous material. Some crystals are clear and doubly terminated. In addition many form as reverse scepters (smaller crystals on ends).

SMOKY QUARTZ VARIETY

Amelia County - Smoky quartz some of gem quality has been reported from several mines. At the Rutherford mines (Pegau, 1928); Pinchbeck Farm near Amelia (R.J. Bland, Jr., personal communication); Champion mine (H.T. Urbach, Jr., personal

Figure 10. Quartz crystals from Rich Alley, Smyth County, some crystals are scepter type and some have carbon inclusions (photograph courtesy of R.V. Dietrich).

communication); Jefferson No. 2 mine (Richard Kell, personal communication).

Powhatan County - Excellent smoky quartz crystals and clusters are found associated with a pegmatite near the intersections of Highways 13 and 60 (Don Richardson, personal communication) and also at the Farley mine northeast of Flat Rock (Rudolph J. Bland Jr., personal communciation). Bland notes clear to smoky crystals at the Richardson prospect northeast of Flat Rock. Good crystals have also been found at the Herbb No. 2 mine.

Spotsylvania County - Massive clear, light yellow quartz suitable for cutting has been found at the Edenton pegmatite mine near Lake Anna (William F. Giannini, personal communication).

STAR QUARTZ VARIETY

Asterated (star) quartz has been reported from several localities in Virginia.

Amelia County - Star quartz is found at the Jefferson No. 9 mine 4 miles northeast of Amelia (Richard Kell, personal communication). The Ligon mine, formerly a fee locality, has also produced some quartz which will cut a star.

Campbell County - Star quartz is found northwest of Altavista near the intersection of State Routes 711 and 712 (William F. Giannini, personal communication).

Henry County - Blue quartz that produces a four-rayed star has been reported from Bull Knob.

Powhatan County - Specimens are found at the White Peak mines northeast of Flatrock (R.J. Bland Jr., personal communication).

Bedford County - Quartz which will cut a star is reported from the Lance and Wheatley mine (William F. Giannini, personal communication).

QUART WITH TOURMALINE INCLUSIONS

Amelia County - Quartz with inclusions of tourmaline have been found at the Champion mine (William F. Giannini, personal communication) (Figure 11). Some of these specimens would make good cutting material.

RHODONITE

Fluvanna County - Gem quality rhodonite can be found north of Kidds Store in the western part of the county (Figure 12). The locality consists of several manganese prospects on both sides of the south fork of Cunningham Creek. The rhodonite occurs in veins with jasper, quartz, specularite, chlorite, actinolite, magnetite, goethite, hematite and pyrolusite. The geology of the area is described by Smith and others, (1964).

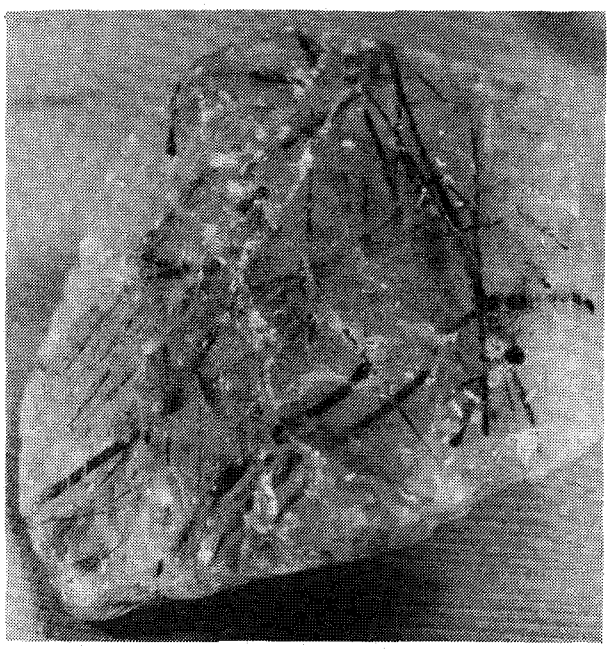


Figure 11. Quartz with tourmaline inclusions from Champion mine, Amelia County; specimen 3 inches across (photograph by T.M. Gathright, II).

Rhodonite at this deposit ranges from light- to dark-pink and specimen often contain veinlets of black pyrolusite which form interesting designs and patterns on the pink rhodonite. The prospect area is currently open to collectors on a fee basis. Arrangements to visit the property can be made by contacting William D. Baltzley, telephone number (804) 561-3399.

ROCKBRIDGEITE

Rockbridge County - The rare mineral rockbridgeite was named for Rockbridge County, Virginia where it was first recognized as a distinct mineral species in samples from the Midvale iron mine south of Vesuvius. Today no samples from the Midvale mine are available, however rockbridgeite can be found on the dumps of the Dixie iron mine, 1.5 miles east of Vesuvius. When found at the mine the mineral has a rather dark fibrous greenish-black appearance. However when cut and polished the mineral looses the green color and takes on a brilliant luster which resembles black jade. Attractive jewelry has been made with this material. The mineralogy of the Dixie mine is described by Kearns and Penick (1989).

SPHALERITE

Rockingham County - Resinous yellowish-brown sphalerite from the Bowers-Campbell zine mine near Timberville has been cut into cabochons and used in jewelry. Sphalerite has an extremely bright luster and one of the highest indexes of refraction among minerals used as gemstones.

SILLIMANITE

Campbell County - Gem quality sillimanite has been found northwest of Altavista near the intersections of State Routes 711 and 712. At this locality sillimanite is an alteration product of andalusite and occurs as extremely fine-grained fibrous masses known as the variety fibrolite (Mitchell and others, 1988). Polished cabochons display an attractive cats eye effect or chatoyancy and have been used in jewelry.

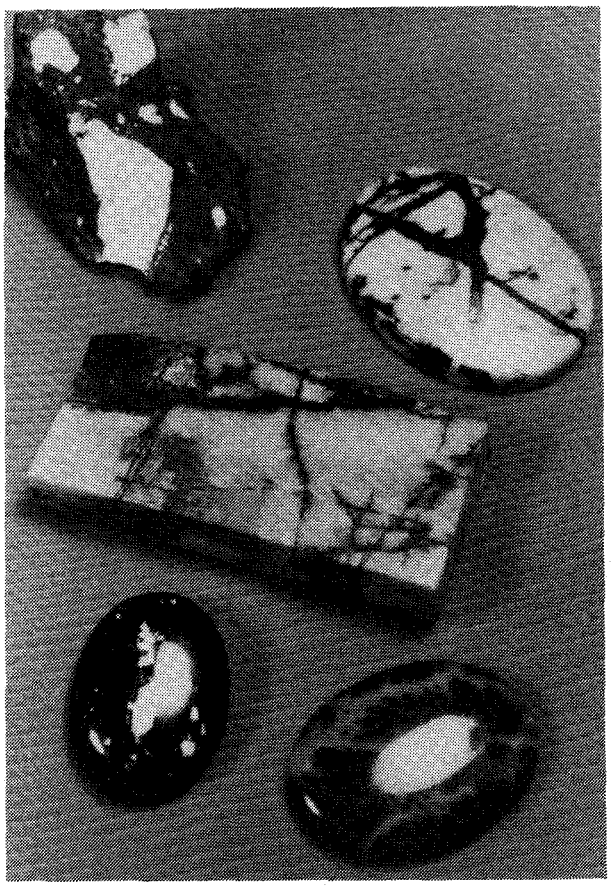


Figure 12. Rhodonite, tacharanite, and plume agate; counterwise from upper left - tacharanite (white) in basalt, Highland County; rhodonite cabachon, Fluvanna County; plume agate cabachon, Warren County; tacharanite cabachon, Highland County; center - polished rhodonite slab 2 inches long (photograph by T.M. Gathright, II).

SPINEL

HERCYNITE VARIETY

Rockingham County - Dark, clear, greenish-black gem quality hercynite has been found in diabase on Mole Hill west of Harrisonburg. At least one stone from this site has been cut for gem purposes (Richard V. Dietrich, personal communication).

STAUROLITE

Staurolite is a fairly common mineral in the mica schists of the Virginia Piedmont. The mineral commonly forms twin crystals or crosses referred to as "Fairy Stones." The most notable occurrence are in Patrick and Henry Counties where Fairy Stone Park is located. (Figure 13) A commerical staurolite mine is located in Patrick County north of Stuart on U.S. Route 58. Information on this operation can be obtained by contacting Ernest Hopkins at (703) 694-3340.

A large percentage of the staurolite crystals in this area have been altered to pseudomorphs of sericite after staurolite. The pseudormorphs are usually brown while fresh unaltered crystals can be black or brown. Most of the staurolite crystals sold commerically as "fairy stones" or "fairy crosses" have been filed and shaped into right angle (90°) crosses and soaked in linseed oil to give the desired dark brown color. In Virginia very few natural staurolite crystals form the 90° cross. More common are the 30° and 60° twins. Many of the staurolite crystals have small pits on the crystal faces from which garnet crystals have weathered, giving a typical pitted appearance. Staurolite crosses are used as amulets, good luck charms, watch charms, cuff buttons and other ornaments.

Figure 13. Staurolite crystals from near Stuart, Patrick County; most of the crystals have been "shaped" into 90o crosses and soked in linseed oil (photograph coursety of Virginia State Library).

TACHARANITE

Highland County - Tacharanite is a rare white porcellaneous mineral. On State Road 620 near Doe Hill it is found as amygdule fillings in black to dark gray basalt (Mitchell and Giannini, 1987) (Figure 12). The basalt occurs as dikes cutting limestone country rock. This occurence of tacharanite is the first recorded in the United States. The mineral is associated with thomsonite, a white to pinkish zeolite mineral.

Matrix specimens of the white tacharanite on dark basalt give the appearance of snowflake obsidian. Attractive cabochons have been cut from this material. One mass of tacharanite was large enough to be cut into a pure white cabochon without matrix.

TOPAZ

Amelia County - Blue, sherry colored and colorless topaz crystals and masses have been found at the Moorefield mine. Some of this material was suitable for faceting. Good examples of crystalline topaz and amazonite can sometimes be seen at the 45 foot level of the mine which has recently been dewatered and retimbered. Silas Moorefield, the original owner of the mine, reported an opaque topaz crystal 44 inches long weighing 500 pounds (Glass, 1935), and smaller crystals with double terminations. Blue topaz has been found at the Rutherford mine though rarely in well-formed crystals. Gem topaz production from this mine has been relatively minor.

Powhatan County - On September 14, 1982, a gem quality topaz crystal 10.9 inches in length and weighing 8.9 pounds was found on the dumps of the Herbb # 2 pegmatite mine by Peter McCrery (Giannini and Penick, 1983) (Figure 13). This crystal, believed to be the largest gem quality topaz crystal found in North America, has a virtually flawless, transparent colorless interior. The crystal is terminated on one end and broken along a basal cleavage plane on the other. In addition to the large crystal, several smaller pieces of gemmy, colorless to pale blue topaz crystals were found. These smaller pieces were thought to have been derived from the large crystal. Some of the smaller gem quality pieces were subsequently faceted and used in jewelry.

The mine was operated on a fee basis for about 6 years but is now closed to collecting.

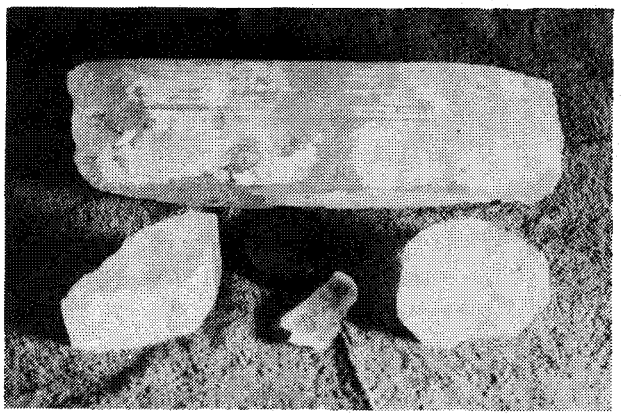


Figure 14. Large gem quality topaz, length 10.9 inches; smaller gem quality pieces probably were broken from larger crystal (photograph by Howard Freeland).

TOURMALINE GROUP

Buckingham County - To the writers knowledge no facet grade tourmaline has been reported from Virginia. A few cabochons have been cut and pendants have been made from black tourmaline crystals, probably schorl, on a background of white quartz. A locality south of New Store has produced such material.

TROLLEITE

Buckingham County - Trolleite is a rare, pale green, hard phosphate mineral that resembles apatite and beryl. It was discovered at the Willis Mountain kyanite quarry associated with milky to pale gray quartz, apatite and kyanite (Giannini and others, 1986). A few small cabochons were cut from this material which resembles light green jade.

TURQUOISE

Campbell County - The turquoise crystal locality at the Bishop mine near Lynch Station is briefly described even though it is probably unsuitable for use as a gemstone although it takes an excellent polish (Schaller, 1912). The small brilliant blue-green crystals are too soft and brittle to be shaped or polished. It may be possible to cap a small cluster of crystals on white quartz for use as a pendant or ornamental piece. Crystals are found both on quartz and in schist.

For many years the Bishop mine was the only known deposit where turquoise crystals could be found. Since this discovery in 1911 crystals have been reported from Brazil and several European localities.

ZOISITE (EPIDOTE GROUP)

THULITE VARIETY

Bedford County - Masses and small pink to rose colored crystals of thulite, associated with feldspar, have been collected from the Wheatley pegmatite mine east of Moneta. Cabachons have been cut from some of the better material and used in jewelry (William F. Giannini, person communiation).

ORGANIC GEMSTONES

CRINOIDS

Augusta County - Pink crinoid fossils of calcite in limestone matrix have been collected from the Gay quarry near Craigsville. Some of these specimens have been slabbed, polished and made into various ornaments (Herbert L. Grow, personal communication).

PEARLS

Nelson County - Pink blister pearls from 5 mm to 20 mm in size were reported to occur in large fresh water mussells in Sneads Pond near Schuyler. The locality is just upstream from the electric power-plant dam constructed on the Rockfish River by the Alberene Soapstone Company (William F. Giannini, personal communication).

ROCKS

LIMESTONE - MARBLE

Several limestone and marble formations in the Valley and Ridge and Piedmont provinces have produced material suitable for cabochons, book-ends and other ornaments.

Appomattox County - Both pink and white marble from the Mt. Athos Formation is being quarried near Oakville by the Appomattox Lime Company. Attractive pink cabochons have been made from this material. The dense white marble is also sought as a sculpturing medium.

Rockingham County - Black limestone from the Edinburg Formation has been produced from a quarry near the northern city limits of Harrisonburg. The rocks takes an excellent polish and is particularly appealing when cut by veins of white calcite. The limestone was marketed under the name Jamison Black Marble and was used as a dimension and ornamental stone. It was also crushed at the quarry for use as terazzo. This operation is now abandoned. Fine examples of this material can be seen in the Dr. Ralph Hostetter Museum of Natural History at the Eastern Mennonite College in Harrisonburg.

Rockbridge County - Three localities in Rockbridge County have yielded limestone suitable for cabochons and other ornaments. On Poages Run near Fancy Hill samples from an outcrop of Conocheague limestone have been used as dresser tops, book ends and other decorative pieces. A small quarry is still evident at this locality. This high grade limestone which ranges from white to pink, has a thickness of 15 feet. This site is referred to as a lithographic limestone quarry on the 1883 map of Rockbridge County. Similar material is found on the Junior Martin Farm near Wesley Chapel. A pink limestone suitable for various cabochons and ornaments can be found on the Maury River near Rockbridge Baths on the south side of State Highway 39, (William F. Giannini, personal communiation).

SLAG

Slag is not a rock or a mineral but is included here because it is composed of rock and mineral products and is marketed for jewelry purposes. Slag represents the impurities from iron furnances. It is mostly silicon oxide. Piles of this material can often be found around abandoned furnaces. The slag resembles glass and can be very colorful sometimes resembling agate with alternating banks of green, brown, blue, gray, and bluish-white. Almost every color except red and orange has been observed by the writer. Slag tends to be a little porous but attractive cabachons can be cut from solid material.

SLATE

Buckingham County - The LeSueur - Richmond Slate Corporation operates several quarries at Arvonia. The primary uses for the slate are in roofing shingles and for dimension stone. As a sideline the company also produces products such as paper weights, bookends, pen stands, name plates, clocks, signs and other ornanments.

SOAPSTONE

Albemarle - Nelson Counties - The New Alberene Stone Company Inc. operates soapstone quarries in these two counties. The soapstone is primarily used in constructing wood stoves and for building and dimension stone. In addition the company has available soapstone products such as counter tops, shot glasses, egg holders, grills, and paper weights. Soapstone is also shipped around the world for use in sculpturing.

UNAKITE

Unakite is a metamorphic rock composed primarily of pink, red, and orange feldspar, gray quartz and dark green epidote. Other minerals which may occur in minor amounts include apatite, biotite, magnetite, pumpellyite and zircon. The rock is popular with people interested in lapidary work because it has a colorful appearance when polished and is often used as a decorative or ornamental stone and in inexpensive jewelry.

Unakite was described and named in 1874 for an occurrence in the Unaka Range of the Great Smoky Mountains of North Carolina and Tennessee. Subsequently it was observed in Virginia, at Milan Gap (Page and Madison Counties) in 1904. Since then unakite has been found in numerous other places in the Blue Ridge Mountains of Virginia. Several of the better known of these localities are briefly described.

Madison County - Water worn pebbles and boulders of unakite are found along the Rose River near Syria.

Page County - Unakite of good quality is found in various locations along Hawksbill Creek.

Rockbridge County - Outcrops of unakite can be found in the old state quarry located on State Highway 56, 1.5 miles east of Vesuvius. Some of this material tends to be a little weathered.

Other unakite localities in Albemarle, Augusta, Grayson, Greene, Nelson and Roanoke Counties are described by Zeitner (1968).

REFERENCES CITED

Anonymous, 1847, Plan and description of the Vauclase mine, Orange County, Virginia:J.G. Schmacke, Printer, Philadelphia, Pennsylvania, 13 p.

Brown, W.R., 1962, Mica and feldspar deposits of Virginia: Virginia Division of Mineral Resource, Mineral Resource Report 3, 195 p.

Conley, J.F., and Toewe, E.C., 1968, Geology of the Martinsville West Quadrangle, Virginia: Virginia Division of Mineral Resource, Report of Investigations 16, 44 p.

Dietrich, R.V., 1965, The general absence of blue quartz in sedimentary rocks of the "Folded Appalachians" of South western Virginia: Southeastern Geology, v. 7, p. 108.

Dietrich, R.V., 1990, Minerals of Virginia -1990: Virginia Division of Mineral Resources, 474 p.

Gaul, J.M., 1980, Amethyst localities in Virginia: Independent research paper, Department of Environmental Sciences, University of Virginia.

Genth, F.A., 1890, Contributions to Mineralogy, n. 46 on a new occurrence of corundum in Patrick County, Virginia American Journal of Sciences, Series, 3, v. 39, p. 47-50.

Giannini, W.F., and Penick, D.A., 1983, Large gem topaz discovery: Virginia Minerals, v. 29, n. 1, p. 1-3.

Giannini, W.F., Penick, D.A., and Fordham, O.M., 1986, Mineral update (trolleite): Virginia Minerals, v. 32, n. 1, p. 11.

Glass, J.J., 1935, The pegmatite minerals from near Amelia, Virginia: American Mineralogist, v. 20, p. 741-768.

Green, B., 1982, Richmond-found diamond exists - but where?, Richmond News Leader, p. 2.

Henika, W.S., 1971, Geology of the Bassett Quadrangle, Virginia: Virginia Division of Mineral Resources, Report of Investigations 21, 43 p.

Holden, R.J., 1944, The "Punch" Jones and other Appalachian diamonds: Virginia Polytechnic Institute Engineering, Experimental Station Series, n. 56, 32 p.

Hubbard, D.A., 1990, Karst and associated mineral deposits in Virginia: Proceedings - 26th Forum on the geology of Industrial Minerals, Virginia Division of Mineral Resources, Publication 119, p. 135-138.

Kearns, L.E., and Penick, D.A., 1989, The Dixie mine, Rockbridge County, Virginia: Rocks and Minerals, v. 64, n. 1 p. 42-45.

Mitchell, R.S., and Bland, R.J., 1963-64, The Minerals of Albemarle County, Virginia (Parts I, II & III): Rocks & Minerals, v. 30, p. 565-570; v. 37, p. 27-28 and 127-132.

Mitchell, R.S., and Redline, G.E., 1980, Minerals of a weathered allanite pegmatite, Amherst County, Virginia: Rocks And Minerals, v. 55, p. 245-247.

Mitchell, R.S., and Giannini, W.F., 1987, Tacharanite in an amygdaloidal basalt, Highland County, Virginia: Mineral Magazine, v. 51, p. 467-468.

Mitchell, R.S., Giannini, W.F., and Penick, D.A., 1988, Large andalusite crystals from Campbell County, Virginia: Rocks & Minerals, v. 63, n. 6, p. 446-453.

Mitchell, R.S., Giannini, W.F., and Fordham, O.M., 1988, Mineral Update: Plume agate from Warren County, Virginia; Virginia Minerals, v. 34, n. 1, p. 5-6.

Pegau, A.A., 1928, The Rutherford mines, Amelia County, Virginia: American Mineralogist, v. 13, p. 583-588.

Pegau, A.A., 1932, Pegmatite deposits of Virginia: Virginia Geological Survey Bulletin 33, 123 p.

Penick, D.A., 1987, Virginia mineral locality index: Virginia Minerals, v. 33, n. 1, p. 1-10.

Schaller, W.T., 1912, Crystallized turquoise from Virginia: U.S.Geological Survey Bulletin 509, Mineralogical Notes, series 2, p. 42-47.

Schlegal, D.M., 1957, Gemstones of the United States: U.S.Geological Survey Bulletin, 509, 115 p.

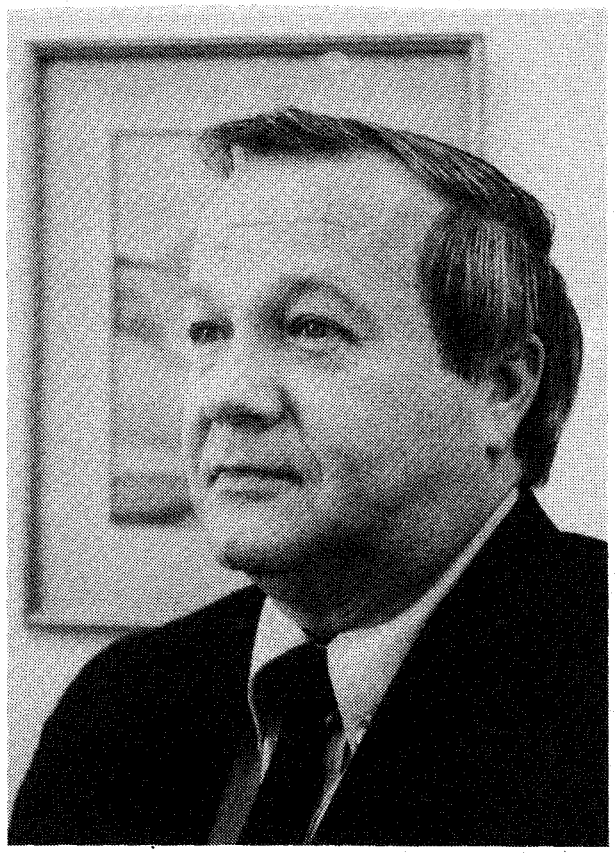
Simpson, T.C., 1980, The history, geology and mineralogical survey of the area known as the glades copper district: Independent research paper, Department of Environmental Sciences, University of Virginia.

Sinkankas, John, 1959, Gemstones of North America: D. Van Nostrand Co. Inc., 675 p.

Sterrett, D.B., 1973, Gems and Precious Stones: U.S.Geological Survey, Mineral Resources for 1912, p. 1029-1032, 1045-1048.

Wise, M.A., 1981, Blue Quartz in Virginia: Virginia Minerals, v. 27, n. 2, p. 9-13.

Zeitner, J.C., 1968, Appalachian Mineral and Gem Trails: San Diego, Lapidary Journal Inc., 134 p.



DMME NAMES NEW STATE GEOLOGIST

Stanley S. Johnson became State Geologist and Director of the Division of Mineral Resources on May 6, 1992. Stan is a veteran geologist with 28 years of service with the Division of Mineral Resources and was previously the Manager of the Geologic Research Branch at the Division.

Stan's career started with the Division of Mineral Resources in 1963 after graduation from the University of Virginia where he earned a B.A. degree in Geology. His first activities at the Division were in the Economic Geology Section. He was promoted in 1970 to supervise and plan the activities of a newly created Geophysical Surveys Section. He helped pioneer the Division's gravity, aeromagnetic, and aeroradioactivity mapping programs, and initiated and managed the Division's observational seismology program. He was requested to take responsibility for the management and administration of grants, contracts and cooperative agreements in 1983. With these new duties he was also made Head of Special Projects. In 1989, under a reorganization he was made Manager of the Geologic Research Branch.

Stan has an extensive background in grants and contract management. Most recently, as Geologic Research Branch Manager, he managed and directed the geologic investigations and research programs for the Division of Mineral Resources. In this capacity he directed the activities of the Economic Geology, Applied Geology, Geologic Mapping, Southwest, and Information and Publications Sections of the Division. He has authored or co-authored over 40 publications and abstracts on Virginia's geology, geophysics, and mineral resources, with a major emphasis in geophysics.

He is active in the Society of Exploration Geophysicists where he has been Chairman of the Membership Committee (1982-83) and was a member of the Professional Affairs Committee (1980-88), served as the Society's Second Vice President (1986-87) and as General Vice Chairman of the 55th Annual International Meeting (1985), and is currently the General Chairman for the 63rd Annual International Meeting (1993). Stan was President of the Potomac Geophysical Society (1980-81) and Secretary in 1979-80. Stan is active in the American Institute of Professional Geologists. He served as the AIPG Annual Meeting Chairman in 1989; as National Secretary (1986, 1987); as Chairman of the State Affairs and Registration Committee (1987); and received the Institute's Martin Van Couvering Memorial Award in 1989. He has also received two National Presidential Certificates of Merit from the Institute.

NEW HEADQUARTERS BUILDING

The Department of Forestry and DMME's Division of Mineral Resources and Division of Mineral Mining will soon be moving to a new home. The two DMME agencies will move to a new office complex being built by the Department of Forestry. The site, which was developed by Forestry as a forest tree nursey before World War II, is located just outside of Charlottesville in Albemarle County. The buildings will house the state headquarters of these three agencies as well as local offices of the Department of State Police and the Alcoholic Beverage Control Board.

The new headquarters building will be a two story steel framed building faced with Virginia-fired brick veneer. Total area will be 103,000 square feet. In adition to office spaces there will be shared conferences rooms, a training auditorium, library, dinning room, and a Commonhealth facility. A unique feature of the building will be a full thermal air conditioning system using ice storage. Ice will be made during the night, when demand for electricity is reduced, and then used to cool the building during the day. This is the first state owned building to use this technology. Although the efficiency of the technology has been well established, the cost effectiveness has not been well documented. The new building will contain an elaborate computer-based monitoring system to provide an analysis of effectiveness and efficiency.

In addition to the Headquarters office building, the project includes a 32,000 square feet Administrative Support Facility. Although primarily a Department of Forestry building, it includes 4,000 square feet for Mineral Resources' repositories. Forestry space will include a radio and communication shop where radios will be installed in vehicles, a float and exhibit shop, a shop where Smokey Bear suits are created, and the DOF warehouse. A vehicle fuel facility will be available for all agencies. This facility will be unmanned with plastic card access and computerized billing.

The Department of Forestry will be responsible for construction, maintenance, and operation of the building. The building is being financed by the Virginia Public Building Authority with a bond issue. The agencies resident in the building will not need to include debt service in their budgets. Maintenance cost will be pro-rated according to space. The state employees in these facilities will have greatly improved working conditions and they will be able to provide more effective service to the taxpayers of the Commonwealth.

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